New Event Generator Review

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Monte Carlo Event Generators

- **New review in RPP 2012**
  - Originally suggested by Advisory Committee (thank you!)
  - 10 pages (in big book)

- **Written by**
  - Paolo Nason (INFN), one of the main POWHEG authors
  - Peter Skands (CERN), one of the main PYTHIA authors
  - Coordinated by Christian Bauer (LBNL)

- **Very active field**
  - Particularly since start of LHC
  - Lots of interaction between theory and LHC experiments
  - Might be useful to cover some of the latest developments (e.g. matrix element matching), but this would require more space

Topics

- **Discusses "general-purpose Monte Carlo" (GPMC) generators**
  - HERWIG(++), PYTHIA 6 & 8, SHERPA, ...

- **4 main sections**
  - **Short-distance physics in GPMC generators**
    - Basic concepts for simulation of dominant QCD processes
  - **Hadronization models**
    - Discusses both string and cluster models
    - Decay of primary hadrons into stable ones
  - **Models for soft hadron-hadron physics**
    - Underlying event, minimum bias interactions
  - **Parameters and tuning**
    - Brief discussion of MC tuning, including automated tools

Neutrino Event Generators

- **Not covered in this review article**

- **New neutrino event generators review in preparation**
  - Two new authors:
    - Hugh Gallagher (Tufts)
    - Yoshinari Hayato (Tokyo)
  - Coordinated by Cheng-Ju Lin (LBNL)
  - Work is in progress, but draft was not ready in time for RPP 2012
  - Will be included in the 2013 review updates